

AD \_\_\_\_\_

GRANT NO: DAMD17-94-J-4008

TITLE: SIXTH ANNUAL SYMPOSIUM ON SUBTYPES OF MUSCARINIC  
RECEPTORS

PRINCIPAL INVESTIGATOR: Ruth R. Levine

CONTRACTING ORGANIZATION: Boston University School of Medicine  
80 East Concord Street  
Boston, Massachusetts 02118

REPORT DATE: March 3, 1995

TYPE OF REPORT: Final Proceedings



PREPARED FOR: U.S. Army Medical Research and Materiel Command  
Fort Detrick  
Frederick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for public release;  
distribution unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

19950405 001

# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 3 Mar 95	3. REPORT TYPE AND DATES COVERED Final Proceedings	
4. TITLE AND SUBTITLE Sixth Annual Symposium on Subtypes of Muscarinic Receptors.			5. FUNDING NUMBERS Grant No. DAMD17-94-J-4008	
6. AUTHOR(S)  Ruth R. Levine				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Boston University School of Medicine 80 East Concord Street Boston, Massachusetts 02118			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick Frederick, Maryland 21702-5012			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) <p>The Sixth Symposium on Subtypes of Muscarinic Receptors, held in Ft. Lauderdale, FL. from Nov.9-12, 1994 had 190 attendees, 87 of whom were from 16 countries outside the U.S.. Thirty-one major papers were presented, 3 by women scientists and 3 by the winners of the Otto Loewi New Investigator Awards. There were 97 posters presented in the 2 scheduled sessions but posters were accessible for the entire 3½ day meeting. Clinical data on Xanomeline, a new drug for the treatment of Alzheimer's disease was also presented. Funds granted by USAMRAA made it possible to publish quickly and disseminate widely the Symposium Proceedings. The edited manuscripts of the invited papers and the abstracts of poster papers were published Feb.10, 1995 as Vol.56, Nos.11/12 of <u>Life Sciences</u> and sent free to its thousands of subscribers and to hundreds of others. Grants from NSF and NIH supported the attendance of 29 pre- and postdoctoral fellows, 26 of whom presented posters. The choice of dates and venue for the Symposium also made it possible for many to attend The Society for Neuroscience meeting.</p> <p style="text-align: right;">DTIC QUALITY INSPECTED 5</p>				
14. SUBJECT TERMS Subtypes of Muscarinic Receptors; Alzheimer's Disease; Pulmonary function; Asthma			15. NUMBER OF PAGES 290	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT  Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE  Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT  Unclassified	20. LIMITATION OF ABSTRACT  Unlimited	

## FINAL REPORT

The recently completed Sixth Symposium on Subtypes of Muscarinic Receptors was judged an outstanding success on the bases of: 1) the quality and timeliness of the invited scientific papers; 2) the large number of poster presentations; 3) the invited participation of women and minorities in the scientific sessions; 4) the large number of pre- and postdoctoral fellows whose attendance was made possible by funds granted to the Symposium, and 5) the establishment of the Otto Loewi New Investigator Awards and the excellent papers presented by the three awardees.

There were 190 attendees, 87 of whom were from 16 countries outside the United States (attendee names and addresses are attached). Thirty-one (31) major papers were presented, three of these by women scientists and three by the young scientists who won the Otto Loewi New Investigator Awards. A total of 97 poster papers were presented in the two afternoon sessions set aside for this (however, posters remained up for the entire 3 1/2 day meeting) and clinical data on Xanomeline, a new drug for the treatment of Alzheimer's disease, was also presented.

The Proceedings of the Sixth Symposium, which contains the edited manuscripts of the papers presented in the regular sessions as well as the abstracts of the poster papers has just been published--less than 3 months following the close of the Symposium.

The Proceedings appears as Vol.56, Nos 11/12, of the February 10, 1982

Dist

A-1

Special

☒  
☐  
☐

1995 issue of Life Sciences and is sent free of charge to the thousands of subscribers of Life Sciences worldwide as well as to hundred of others. Grant support from the U.S. Army Research Aquisition Activity was largely responsible for the publication of the Proceedings and has been acknowledged in the program distributed to all registrants and in Life Sciences. We are extremely pleased that the grants we received and the funds contributed by 35 pharmaceutical companies made it possible for us to pay the travel and accommodation expenses of the 23 speakers and committee members from academia. The figure of which we are most proud, however, concerns the large number of pre-and postdoctoral students whom we were able to bring to the Symposium. There were 29 in all and 26 of these young investigators used this opportunity to present the results of their own research. The attendance of these young scientists was made possible and was largely supported by grants from the National Science Foundation, The National Institute of Neurological Disorders and Stroke, as well as by contributions from industry. As a direct result of these grants, 17 of the pre- and postdoctoral fellows were able also to attend the annual meeting of the Society for Neuroscience in Miami (our venue and dates were purposely chosen with this in mind). A list of the pre-and postdoctoral fellows and their affiliation is appended along with sample copies of the many letters received indicating the benefits derived from, and the overall success of, the Symposium.

Another measure of success of the Symposium was the high degree of active participation of the registrants in the formal sessions of the Symposium and their widespread interaction in

informal gatherings. The attendance at each of the five lecture sessions was excellent and appeared to include all registrants. The 10 minute period of discussion between papers was informative and provocative. The excellent lighting and space available for posters encouraged lengthy discussions by both presenters and viewers. There appeared to be much enthusiasm for the research being presented particularly by the young scientists. All in all, it is evident that the Sixth Symposium on Subtypes of Muscarinic Receptors has not only encouraged the research efforts of young investigators but has also stimulated and is stimulating additional research which should, indeed, lead to the development of new and better therapeutic agents as well as agents useful to the U.S. Army Research Aquisition Activity and to the U.S. Army Medical Research Institute Chemical Defense.

Plans for the Seventh Symposium on Subtypes of Muscarinic Receptors are already being made. The Seventh Symposium will be a satellite of the 1996 meeting of The Society for Neuroscience to be held November 16-21 in Washington, D.C.. The Symposium will directly precede the latter meeting and will be held either in Washington or Baltimore. We hope that USAMRAA will again help to support the publication of the Symposium's Proceedings.

# SYMPOSIUM REGISTRANTS 1994

Dr. Yahaya Abuh  
The University of Toledo  
Dept Medicinal & Biological  
Chemistry  
2801 W. Bancroft Street  
Toledo, OH 43606-3390

Dr. Wacław Adamus  
Boehringer-Ingelheim  
D-6507 Ingelheim/Rhein  
Germany

Abdu Adem PhD  
Department of Geriatric Med  
Karolinska institute  
Huddinge Hospital  
14186 Huddinge, Sweden

Dr. H. Akbulut  
Marmara Universitesi Tip  
Fakultesi  
Farmakoloji Anabilim Dalı  
Haydarpasa 81326  
Istanbul, Turkey 81326

Dr. Piero Angeli  
Dept. of Chemical Sciences  
University of Camerino  
Via S. Agostino  
1-62032 Camerino, Italy

Dr. Corinni Augelli-Szafran  
Parke-Davis Pharmaceutical  
Research  
2800 Plymouth Road  
Ann Arbor, MI 48105

Dr. Peter J. Barnes  
National Heart & Lung Inst.  
Dovehouse Street  
London SW3 6LY  
United Kingdom

Dr. Steven Baskin  
Biochemical Toxicology  
SGRD-UV-PB  
USAMRICD  
Aberdeen Proving Ground  
Maryland 21010-5425

Dr. Robert Baughman  
Dept Neurobiology  
Harvard Medical School  
220 Longwood Ave  
Boston, MA 02115

Dr. Ian Bell  
Merck & Co., Inc.  
P.O. Box 4, WP26-410  
West Point, PA 19486

Dr. Joel G. Berger  
Schering-Plough Research Inst.  
2015 Galloping Hill Road  
Kenilworth, N.J. 07033-0539

Dr. Niels Bindslev  
Dept of General Physiology & Bio  
Panum Inst Univ of Copenhagen  
DK-2200 Copenhagen N, Denmark

Dr. Nigel Birdsall  
Div of Physical Biochemistry  
National Institute Med Research  
The Ridgeway, Mill Hill  
London NW7 1AA  
United Kingdom

Dr. Berith Bjornholm  
H. Lundbeck A/S  
Ottiliavej 9  
DK-2500 Copenhagen-Valby  
Denmark

Dr. Nathalie Blin  
NIH/NTDDK/LBC  
Lab. of Bioorganic Chemistry  
Bldg. 8A-Rm. B1ADG  
Bethesda, MD 20892

Dr. Klaus Bluml  
Department of Pharmacology  
University of Frankfurt  
Theodor-Stern-Kai 7  
Gebäude 75A  
D-6000 Frankfurt/M  
Germany

Dr. Neil C. Bodick  
Eli Lilly and Company  
Lilly Corporate Center  
Drop Code: 2129  
Indianapolis, IN 46285

Dr. Livio Brasili  
Universita Degli Studi Di Modena  
Dept Science Farmaceutiche  
41100 Modena-Via Campi, 183  
Modena, Italy

Dr. Charles Brink  
CNRS URA 1159  
CCML 133 20 de la Resistance  
92350 Le Plessis Robinson  
France

Joan Heller Brown PhD  
Dept. of Pharmacology M-036  
Univ. of California, San Diego  
La Jolla, CA 92093

Dr. Neil Burford  
University of Leicester  
School of Medicine  
Medical Sciences Building  
University Road  
P.O. Box 138  
Leicester LE1 9HN, England

Sir Arnold Burgen  
Department of Pharmacology  
University of Cambridge  
Tennis Court Road  
Cambridge, CB 21 QJ  
United Kingdom

Dr. Ethan Burstein  
Department of Psychiatry  
Medical Alumni Building  
University of Vermont  
Burlington, Vermont 05405

Dr. Frank Bymaster  
Eli Lilly Res. Laboratories  
Drop Code 0815  
Lilly Corporate Center  
Indianapolis, IN 46285

Dr. David Calligaro  
Lilly Research Laboratories  
Eli Lilly and Company  
P.O. Box 708 (GL45)  
Greenfield, IN 46140

Dr. Franco Cantalamessa  
Universita' Di Camerino  
Istituto Di Farmacologia  
Via M. Scalzina  
3-62032 Camerino (MC)  
Italy

Dr. Lucio G. Costa  
Univ. of Washington  
Dept. of Environmental  
Health SC-34  
Seattle, WA 98195

Dr. Paola Costa  
University of Washington  
Department of Environmental  
Health, SC-34  
Seattle, WA 98195

Joseph Coupet PhD  
Lederle Laboratories Med Res  
American Cyanamid  
North Middletown  
Pearl River, NY 10965

Dr. Gianluigi D'Agostino  
Institute of Pharmacology  
University of Pavia  
Viale Taramelli 14  
I-27100-Pavia, Italy



Dr. Shaunagh Darroch  
Victorian Col. of Pharm. Ltd.  
381 Royal Parade  
Parkville, Victoria 3052  
Australia

Dr. Shubhik DebBurman  
Northwestern University  
Medical School  
Dept. of Molecular Pharmacology  
& Biological Chemistry  
Searle 8-477, 303 E. Chicago Avenue  
Chicago, IL 60611

Dr. Neil Delapp  
Lilly Research Laboratories  
Lilly Corporate Center  
Indianapolis, Indiana 46285

Dr. Carlo De Micheli  
Universita di Trieste  
Dipartimento de Scienze Farmaceutiche  
Piazzale Europa S-34127 Trieste  
Italy

Dr. E.A. Dubois  
Academic Medical Center  
University of Amsterdam  
Dept Pharmacotherapy Fac Geneesk  
Meibergdreef 15 Amsterdam  
The Netherlands-Post Code 1105 AZ

Dr. Phil Dunbar  
Group Health Northwest  
Washington State University  
S. 13224 Clear Lake Road  
Medical Lake, WA 99022

Dr. William C. Eckelman  
Chief, PET Department  
NIH/Clinical Center  
Bldg 10, Room 1C401  
Bethesda, MD 20892

Frederick Ehlert, Ph.D.  
Dept. of Pharmacology  
College of Medicine  
University of California  
Irvine, CA 92717

Esam E. El-Fakahany PhD  
Dep. Psychiatry Div. Neuroscience  
Box 392 Mayo Memorial Building  
420 Delaware Street S.E.  
Minneapolis, Minnesota 55455

John Ellis, PhD  
Department of Psychiatry  
University of Vermont  
Medical Alumni Bldg.  
Burlington, VT 05405

Dr. Helmut Ensinger  
Boehringer Ingelheim KG  
Dept Biochemical Research  
Bingerstraße, D-55216  
Ingelheim, Germany

Dr. Evette Esqueda  
Univ California, Irvine  
Department of Pharmacology  
College of Medicine  
Irvine, CA 92717

Jerry Farley PhD  
Department of Pharmacology  
University of Mississippi  
Medical Center  
2500 North State Street  
Jackson, MS 39216-4505

Dr. Gaby Ferrari-Dileo  
University of Miami  
School of Medicine  
Dept of Pharmacology (R-189)  
P.O. Box 016189  
Miami, Florida

Margaret Filbert MD  
U.S. Army Medical Research  
Institute of Chem. Defense  
Aberdeen Proving Ground  
Maryland 21010-5425

Stephen Fisher PhD  
Neuroscience Laboratory  
University of Michigan  
1103 E. Huron  
Ann Arbor, MI 48109

Dr. Donna D. Flynn  
University of Miami  
School of Medicine  
Department of Molecular and  
Cellular Pharmacology R189  
Miami, Florida 33101

Dr. Claire Fraser, Director  
Dept. of Molecular & Cell. Biology  
Institute for Genomic Research  
932 Clopper Road  
Gaithersburg, MD 20878

Dr. Kristen Frederiksen  
H. Lundbeck A/S  
Ottiliavej 9  
DK-1500 Copenhagen  
Denmark

Dr. Allison Fryer  
Johns Hopkins University  
School of Hygiene & Pub Health  
Dept Environ Health Sciences  
615 N. Wolfe Street  
Baltimore, MD 21205

Dr. Albert P. Gadbut  
Brigham and Women's Hospital  
Cardiovascular Division  
75 Francis Street  
Boston, MA 02115

Dr. Nicoletta Galeotti  
Dept of Pharmacology  
Viale G.B. Morgagni, 65  
Florence, I-50134, Italy

Dr. Jonas Galper  
Brigham and Women's Hosp  
Department of Medicine  
Cardiovascular Division  
75 Francis Street  
Boston, MA 02215

Dr. Edward Gerstin, Jr.  
University of Calif. Irvine  
Dept. of Pharmacology  
College of Medicine  
Irvine, CA 92727

Dr. P. Gharagozloo  
MRC Collabaorative Centre  
1-3 Burtonhole Lane  
Mill Hill  
London NW7 1AD  
United Kingdom

Dr. Carla Ghelardini  
Dept. of Pharmacology  
"M. Aiazzi Mancini"  
Viale G.B. Morgagni 65  
50 134 Florence, Italy

Dr. Antonio Giachetti  
A. Menarini  
Via Sette Santi, 3  
200,618 Firenze  
Italy

Ms. Ann Gnagey  
University of Vermont  
Department of Psychiatry  
Medical Alumni Bldg  
Burlington, VT 05405

Dr. Stephan Goebel  
Paracelsus Apotheke  
Melanchthon Str 4  
44536 Luenen  
Germany

Dr. Andrea Gozzo  
Med. Chem. Dept.  
Boehringer Ingelheim Italia S.p.A.  
Via Serio, 15  
1-20139 Milano  
Italy

Dr. Jan Gross  
Dept of Pharmacology  
University of Frankfurt  
Biocentre Niederursel  
Marie-Curie-Straße 9  
Gebäude N 260, D-60439  
Frankfurt, Germany

Dr. Fulvio Gualtieri  
University of Florence  
Dipartimento Di Scienze  
Farmaceutiche  
Via G. Capponi #3  
S0121 Florence, Italy

Dr. Brennie E. Hackley Jr.  
USA Medical Research Institute  
of Chemical Defense  
ATTN: SGRD-UN-ZS  
Aberdeen Proving Ground, MD  
21010-5425

Dr. Uli Hacksell  
Astra Arcus AB  
S-151 85 Sodertalje  
Sweden

Dr. E.B. Haddad  
Dept Thoracic Medicine  
National Heart & Lung Inst  
Dovehouse Street  
London SW3 6LY  
United Kingdom

Dr. Robert J. Hamm  
Virginia Commonwealth Univ.  
Department of Psychology  
P.O. Box 842018  
Richmond, VA 23184

Dr. Rudolf Hammer  
Corporate R&D Commission  
Director of Chemistry  
Boehringer Ingelheim  
Zentrale GmbH  
D-6507 Ingelheim/Rhein  
Germany

Dr. Alan Harvey, Director  
Strathclyde Ins for Drug Res  
University of Strathclyde  
204 George Street  
Glasgow G1 1XW  
United Kingdom

Dr. Anne M. Heacock  
Neuroscience Lab  
University of Michigan  
1103 E. Huron  
Ann Arbor, MI 48104-1687

Dr. Steven Hersch  
Emory Univ School of Med  
Dept of Neurology  
WMB Suite 6000  
P.O. Drawer V  
Atlanta, Georgia 30322

Dr. Bertil Hille  
Dept of Physiology & Biophysics  
University of Washington  
Seattle, WA 98195

Dr. Keith Hillier  
Univ. of Southampton  
Clinical Pharmacology Group  
Bassett Crescent East  
Southampton  
Hampshire, S90 3TU  
United Kingdom

Dr. Frank Hollinger  
2015 Galloping Hill Road  
Kenilworth, N.J. 07033  
Mailstop K-15-1/1545

Dr. Donald Hoover  
E Tennessee State University  
Department of Pharmacology  
College of Medicine  
P.O. Box 70577  
Johnson City, TN 37614

Dr. Marlene Hosey  
Department of Pharmacology  
Northwestern Univ Med School  
303 E. Chicago Avenue  
Chicago, IL 60611

Dr. Ed Hulme  
Div of Physical Biochemistry  
National Inst for Med Research  
The Ridgeway, Mill Hill  
London NW7 1AA  
United Kingdom

Dr. Morris Husbands  
Wyeth-Ayerst Research  
C.N. 8000  
Princeton, New Jersey 08543-8000

Dr. Brigitte Ilien  
Laboratoire de Chimie Bio-Organique  
Univ. Louis Pasteur URA 1386 du CNRS  
Faculte de Pharm-74, route du Rhin  
F-67401 Illkirch Cedex, France

Dr. Kenneth A. Jacobson  
NIDDK, NIH-Building 8A  
Bethesda, MD 20892-1008

Dr. Juan C. Jaen  
Warner-Lambert Co.  
Parke-Davis Pharm. Res.  
2800 Plymouth Rd.  
Ann Arbor, MI 48105-2430

Dr. Donald J. Jenden  
UCLA-Department of Pharmacology  
10883 Le Conte Avenue  
Los Angeles, CA 90024-1735

Dr. Diana Jerusalinsky  
Univ of Buenos Aires  
2155 Paraguay  
Buenos Aires, Argentina

Dr. Gary L. Johnson  
Mational Jewish Center of  
Immunology & Respiratory Med  
1400 Jackson Street  
Denver, CO 80206-2761

Miss Nicholla Johnson  
University of Leicester  
Dept Cell Phys & Pharm  
University Road  
Leicester  
United Kingdom

Dr. Francois Jolicoeur  
University of Sherbrooki  
2001 12th Avenue N  
Fleurimont, Quebec  
Canada

Hans Jorgensen  
Dept of Medicinal Chemistry  
Royal Danish Sch of Pharmacy  
Universitetsparken 2  
2100 Kobenhaven, Denmark

Dr. Richard Kahn  
Johns Hopkins University  
School of Hygiene & Public Health  
615 N. Wolfe Street, #7006  
Baltimore, MD 21205

Tsugio Kaneko PhD  
New Lead Research Labs  
Sankyo Co., Ltd.  
Hiromachi 1-2-58, Shinagawa-Ku  
Tokyo 140, Japan

Dr. Stacy Kennedy  
Eli Lilly and Company  
Lilly Corporate Center  
Indianapolis, IN 46285

Dr. Paul Kerr  
University of Southampton  
Bassett Crescent East  
Southampton  
United Kingdom

Dr. Dimitri A. Kharkevich  
Professor and Chairman  
Department of Pharmacology  
Moscow Sechenov Medical Academy  
2/6 B. Pirogovskaya Street  
119881 Moscow  
Russia

Dr. Heinz Kilbinger  
Dept. Pharm. Univ. Mainz  
Obere Zahlbacher Str. 67  
D-6500 Mainz, Germany

Dr. Evi Kostenis  
Dept of Pharmacology &  
Toxicology  
Unstitute of Pharmacy  
University of Bonn  
AN Der Immenburg 4, 53121  
Bonn, Germany

Dr. Maya Kunkel  
Harvard University  
7 Divinity Avenue  
Cambridge, MA 02138

Dr. Gunter Lambrecht  
Department of Pharmacology  
University of Frankfurt  
Biocentre Niederursel  
Marie-Curie-Straße 9  
Gebäude N 260  
D-60439 Frankfurt, Germany

Dr. Jelveh Lameh  
University of California  
School of Pharmacy  
Department of Pharmacy  
San Francisco, CA 94143

Dr. Sebastian Lazareno  
MRC Collaborative Centre  
1-3 Burtonhole Lane  
Mill Hill, London NW7 1AD  
United Kingdom

Dr. Norman H. Lee  
Director, Receptor Lab  
Dept Molecular & Cell Biology  
The Institute for Genomic Res  
932 Clopper Road  
Gaithersburg, Maryland 20878

Dr. Allan I. Levey  
Emory Univ Sch of Med  
Dept of Neurology  
WMB Suite 6000  
P.O. Drawer V  
Atlanta, Georgia 30322

Dr. Ruth R. Levine  
Boston University School of Medicine  
80 E. Concord Street  
Boston, MA 02118

Dr. Georgia Lind  
City College, CUNY  
Dept Biology Science Bldg  
Room 526, 138th at Convent  
New York, NY 10031

Dr. Dane Liston  
Pfizer Central Research  
Eastern Point Road  
Groton, CT 06340

Dr. Jie Liu  
NIH-NIDDK  
Building 8A, Room B1A-09  
Bethesda, MD 20892

Dr. Gary Luthin  
Hahnemann University  
MS409, Broad & Vine  
Philadelphia, PA 19102

Dr. Andrea Maass  
Dept of Pharmacology &  
Toxicology  
Institute of Pharmacy  
University of Bonn  
AN Der Immenburg 4, 53121  
Bonn, Germany

Dr. Rod MacKenzie  
Pfizer Central Research  
Sandwich, Kent, CT 13 9NJ  
United Kingdom

Dr. John Macor  
Fisons Pharmaceuticals  
P.O. Box 1710  
Rochester, N.Y. 14603

Dr. Pierre Mallorga  
Merck Research Laboratories  
P.O. Box 4, WP 42-300  
West Point, PA 19486-0004

Deborah C. Mash PhD  
Univ. Miami Sch. of Med.  
Dept. of Neurology D-4-5  
1501 N.W. 9th Avenue  
Miami, Florida 33136

Dr. Hideki Matsui  
Neuroscience Res Labs  
Sankyo Co., Ltd.  
2-58, Hiromachi 1-chome  
Shinagawa-ku  
Tokyo 140, Japan



Dr. A.D. McHarg  
Dept of Discovery Bio II  
Pfizer Central Research  
Sandwich, Kent  
England CT 13 9NJ

Dr. Lise McKinnon  
University of Washington  
Dept of Pharmacology, SJ-30  
Seattle, WA 98195

Dr. Eddi Meier  
H. Lundbeck A/S  
Dept. Pharmacology  
Ottiliaves 7-9  
DK-2500 Valby, Denmark

Prof. Dr. Carlo Melchiorre  
Universitas Degli Stude  
Dept. Di Scienze Farmaceutiche  
Via Belmeloro, 6-40126  
Bologna-Italy

William S. Messer, PhD  
University of Toledo  
2801 W. Bancroft  
Toledo, OH 43606

Dr. Michihiro Mieda  
281 Rokken-cho  
Kawagoe-shi, Saitama 350  
Japan

Dr. Charles Mitch  
Lilly Research Laboratories  
D.C. 0510 Lilly Corporate Center  
Indianapolis, IN 46285

Frederick J. Mitchelson PhD  
Victorian College of Pharm Ltd  
381 Royal Parade  
Parkville, Victoria 3052  
Australia

Dr. Klaus Mohr  
Dept of Pharmacology  
University of Kiel  
Hospitalstr. 4  
2300 Kiel, Germany

Dr. Anthony Morielli  
Harvard University  
7 Divinity Ave  
Cambridge, MA 02138

Dr Ulrich Moser  
Department of Pharmacology  
University of Frankfurt  
Biocentre Niederursel  
Marie-Curie-Straße 9  
Gebäude N 260  
D-60439 Frankfurt, Germany

Prof Dr Ernst Mutschler  
Department of Pharmacology  
University of Frankfurt  
Biocentre Niederursel  
Marie-Curie-Straße 9  
Gebäude N 260  
D-60439 Frankfurt, Germany

Dr. Stefan R. Nahorski  
Department of Pharmacology  
Univ of Leicester Med School  
University Road  
Leicester, LE1 9HN, U.K.

Dr. Neil M. Nathanson  
Department of Pharmacology SJ-30  
University of Washington  
Seattle, WA 98195

Dr. Carrie Nelson  
Parke-Davis  
2800 Plymouth Road  
Ann Arbor, MI 48106-1047

Lisbeth Nilverbrant PhD  
Kabi Pharmaci Therapeutics  
Dept of Receptor Pharm  
S-11287 Stockholm  
Sweden

Dr. Takashi Ninomiya  
Snow Brand Milk Products Co Ltd  
Two Executive Drive  
Fort Lee, N.J. 07024

Dr. Xavier Norel  
Hopital Marie Lannelongue  
Universite de Paris-Sud XI  
Faculte de Medecine  
CNRS-URA 1159  
133 avenue de la Resistance  
92350 Le Plessis Robinson  
France

Ms. Louise Nuttle  
University of Mississippi  
Medical Center  
Dept of Pharmacology & Toxicology  
Jackson, Mississippi 39216-4505

Dr. Babatunde Ojo  
University of Toledo  
Dept of Medicinal & Biol Chem  
2801 W. Bancroft Street  
Toledo, OH 43606

Dr. Sule Oktay  
Department of Pharmacology  
Marmara Univ Fac of Medicine  
81326 Haydarpasa  
Istanbul, Turkey

Prof. Pierluigi Onali  
Dipartimento di Neuroscienze  
Univ degli Studi de Cagliari  
Via Porcell, 4  
1-09100 Cagliari  
Italy

Dr. Robin Pals-Rylaarsdam  
Northwestern Univer Med School  
Dept of Melecular Pharmacology  
& Biological Chemistry  
303 E. Chicago Avenue  
Chicago, IL 60611

Dr. Iok-Holl Pang  
Alcon Labs  
6201 South Freeway  
Ft. Worth, TX 76134

Dr. Jean-Louis Peglion  
Institut de Recherches Servier  
11, rue des Moulineaux  
92150 Suresnes  
France

Dr. Ernest Peralta  
Dept of Biochemistry  
and Molecular biology  
Harvard University  
7 Divinity Avenue  
Cambridge, MA 02138

Dr. Otmar Pfaff  
Department of Pharmacology  
University of Frankfurt  
Biocentre Niederursel  
Marie-Curie-Straße 9  
Gebäude N260, D-60439  
Frankfurt, Germany

Dr. Martin Pfaffendorf  
Department of Pharmacology  
University of Amsterdam  
Academic Medical Centre  
Meibergdreef 15  
NL-1105 AZ Amsterdam  
The Netherlands

Dr. Brian Pike  
Virginia Commonwealth Univ  
Dept of Psychology  
Box 842018  
808 W. Franklin Street  
Richmond, VA 23294-2018

Miss Angela Popham  
MRC Collaborative Centre  
1-3 Burtonhole Lane  
Mill Hill  
London NW7 aAD  
United Kingdom

Dr. Lincoln Potter  
University of Miami  
School of Medicine  
P.O. Box 016189  
Miami, FL 33101

Dr. Nan-Zian Qian  
National Jewish Center for  
Immunology & Respiratory Medicine  
1400 Jackson Street  
Denver, CO 80206

Dr. Remi Quirion PhD, Director  
Neuroscience Division  
Assistant Scientific Director  
Douglas Hospital Research Centre  
6875 LaSalle Blvd.  
Verdun , Quebec Canada HrH 1R3

Dr. Kurt Racke  
Dept Pharmacology  
University Hospital  
University of Frankfurt  
Theodor-Stern-Kai 7  
D-60590 Frankfurt  
Germany

Dr. Teresa M. Ramirez  
UCSD; Dept Pharmacology 0636  
9500 Gilman Drive, Dept. 0636  
La Jolla, CA 92093-0636

Dr. Richard Ransom  
Merck Research Labs  
WP26A-3025  
West Point, PA 19486

Dr. Carolyn C. Reeve  
University of Miami  
School of medicine  
Dept of Pharmacology (R-189)  
P.O. Box 016189  
Miami, Florida

Dr. Ago Rinken  
Dept of Med & Phy Chemistry  
Biomedical Center, Box 575  
S-751 23 Uppsala, Sweden

Dr. A.F. Roffel  
Department of Pharmacology  
and Therapeutics  
University of Groningen  
Ast. Deusinglaan 2;  
9713 AW Goningen, The Netherlands

Dr. Yasunain Saito  
Snow Brand/UCLA School of Medicine  
1441 Midvale Avenue  
Los Angeles, CA 90024

Dr. Per Sauerberg  
Novo Nordisk  
Novo Nordisk Park  
2760 Malov, Denmark

Mr. Barry Sawyer  
Lilly Corporate Center  
Indianapolis, Indiana 46285  
Drop code 0510

Dr. Michael Schimerlik  
Dept Biochemistry & Biophysics  
Oregon State University  
Cornvallis, OR 97331-6503

Dr. Torsten Schoneberg  
NIH, NIDDK  
Laboratry of Bioorganic Chemistry  
Bldg. 8A, Room B7A-09  
Bethesda, MD 20892

Dr. Roy D. Schwarz  
Neuroscience Pharmacology  
Senior Research Associate  
Parke-Davis  
2800 Plymouth Road  
Ann Arbor, Michigan 48106-1047

Dr. Alexander Scriabine  
Miles Inc.  
Inst. Preclinical Pharm.  
400 Morgan Lane  
West Haven, CT 06516

Dr. Tim Searl  
University Dept of Pharm  
Mansfield Road  
Oxford OX1 3QT  
United Kingdom

Dr. Allan J. Sedman  
Parke-Davis Pharm Research  
2800 Plymouth Road  
Ann Arbor, MI 48105

Dr. Harlan Shannon  
Eli Lilly  
Lilly Research Laboratories  
Lilly Corporate Center  
Indianapolis, IN 46285

Dr. Melinda Shockley  
University of California, SF  
Departments of Pharmacy &  
Pharmaceutical Chemistry  
San Francisco, CA 94143-0446

Diana Slowiejko  
University of Michigan  
Dept. of Pharmacology  
Neuroscience Laboratory  
1103 E. Huron Street  
Ann Arbor, MI 48104-1687

Mordechai Sokolovsky, PhD  
Dept of Biochemistry  
Tel Aviv University  
Tel Aviv, 6997829  
Israel

Ms. Tracy A. Spalding  
Molecular Neuropharmacology Section  
Department of Psychiatry  
Medical Alumni Building  
University of Vermont  
Burlington, VT 05405

Dr. Carol Spencer  
Parke-Davis Pharm. Research  
2800 Plymouth Road  
Ann Arbor, MI

Michael D.B. Swedberg, PhD  
Novo Nordisk A/S  
Novo Nordisk Park  
2760 Malov  
Denmark

Dr. Mitsuo Tanabe  
Sankyo Co., Ltd.  
Neuroscience Res Labs  
2-58 Hiromachi 1-Chome  
Shinagawa-Ku  
Tokyo, Japan

Dr. Haile Tecle  
Pharmacology Department  
Parke-Davis  
2800 Plymouth Road  
P.O. Box 1047  
Ann Arbor, Michigan 48106-1047

Dr. Elizabeth Thomas  
Univ. of Calif. Irvine  
Dept. of Pharmacology  
College of Medicine  
Irvine, CA 92717

Dr. Wayne Thompson  
Merck Research Laboratories  
W26-410  
West Point, PA 19486

Dr. Melissa Tice  
Schering-Plough Research Institute  
2015 Galloping Hill Road  
K15-C324-3600  
Kenilworth, N.J. 07033

Dr. Andrew Tobin  
University of Leicester  
Department of Pharmacology  
& Therapeutics  
Medical Sciences Bldg.  
University Road, Leicester  
United Kingdom

Dr. Lara Tolbert  
University California, SF  
School of Pharmacy  
Box 0446  
San Francisco, CA 94143-0446

Dr. Abdulmaged M. Traish  
Boston University  
School of Medicine  
80 E. Concord Street  
Boston, MA 02118

Dr. Christian Trankle  
Dept of Pharmacology & Toxicology  
Institute of Pharmacy  
University of Bonn  
AN Der Immenburg 4  
53121 Bonn, Germany

Stanislav Tucek, MD, DSC  
Academy of Sciences  
of the Czech Republic  
Institute of Physiology  
Videnska 1083, 142 20 Praha 4-KRC  
Czech Republic

Dr. Jan Vagberg  
Pharmacia AB  
751 82 Uppsala  
Sweden

Dr. Luc Van Hijfte  
Marion Merrell Dow Res Inst  
16, Rue D'Ankara  
67080 Strasbourg  
France

Magali Waelbroeck  
Universite Libre De Bruxelles  
Department of Biochemistry & Nutrition  
School of Medicine  
Building G/E, CP 611, 808 Route de Lennik  
B-1070 Brussels, Belgium

Dr. Franz Waldeck  
Dreslauer Street (4)  
6536 Nieder-Olm  
Germany

Dr. Robert. M. Wallis  
Pfizer Central Research  
Sandwich, Kent CT13 NJ  
United Kingdom

Dr. John S. Ward  
Lilly Research Labs  
Lilly Corporate Center  
Indianapolis, Indiana 46285

Dr. Mark Waugh  
University of Leicester  
Department of Cell Physiology  
& Pharmacology  
Medical Science Bldg.  
University Road  
Leicester  
United Kingdom

Dr. Jahn Wehrle  
Department of Pharmacology  
University of Frankfurt  
Biocentre Niederursel  
Marie-Curie-Straße 9  
Gebäude N 260, D-60439  
Frankfurt, Germany

James W. Wells, PhD  
Fac of Pharm Univ of Toronto  
19 Russell Street  
Toronto, Ontario  
Canada M5S 1A1

Dr. Jurgen Wess  
NIH-NIDDK  
Lab of Bioorganic Chemistry  
Bldg. 8A, Room BIA-09  
Bethesda, MD 20892

Dr. Ignat Wessler  
Pharmakologisches Institut  
der Universität  
Obere Zahlbacher Str. 67 (Hochhaus)  
D-55101, Mainz  
Germany

Dr. Elizabeth WoldeMussie  
Allergan, Inc.  
2525 Dupont Drive  
Irvine, CA 92713

Dr. Ed Wu  
Fison Pharmaceuticals  
755 Jefferson Road  
Rochester NY 14623

Dr. Johan Zaagsma  
University of Groningen  
Dept Medicinal Chemistry &  
Molecular Pharmacology  
14. Deusingiaan 2  
9713 AW Groningen  
The Netherlands

Dr. Guo Zhang  
Dept Dental Research  
University of Rochester  
Box 611  
Rochester, N.Y. 14642



Fellows Supported by Grants.

Predoctoral Fellows

1. Cathryn M. Reever  
University of Miami  
School of Medicine  
Dept. of Pharmacology  
Miami, Florida
2. Lise McKinnon  
University of Washington  
Dept. of Pharmacology  
Seattle, Washington
3. Elizabeth Thomas  
University of California  
College of Medicine  
Dept. of Pharmacology  
Irvine, California
4. Diana Slowiejko  
University of Michigan  
Dept. of Pharmacology  
Ann Arbor, Michigan
5. Melinda Shockley  
University of California  
Dept. of Pharmacy and Pharmaceutical Chemistry  
San Francisco, California
6. Robin Pals-Rylaarsdam  
Northwestern University  
Chicago, Illinois
7. Maya Kunkel  
Harvard University  
Cambridge, Massachusetts
8. Shubhik DebBurman  
Northwestern University  
School of Medicine  
Chicago, Illinois

Predoctoral Fellows (continued)

9. Lara Tolbert  
University of California  
School of Pharmacy  
San Fransico, California
10. Ethan Burstein  
University of Vermont  
Dept. of Psychiatry  
Burlington, Vermont
11. Brian Pike  
Virginia Commonwealth University  
Dept. of Psychology  
Richmond, Virginia
12. Edward Gerstin, Jr.  
University of California  
Dept. of Pharmacology  
Irvine, California
13. Nathalie Blin  
NIH-NIDDK  
Laboratory of Bioorganic Chemistry  
Bethesda, Maryland
14. Albert Gadbut  
Brigham and Women's Hospital  
Cardiovascular Division  
Boston, Massachusetts
15. Evette Esqueda  
University of California  
Dept. of Pharmacology  
Irvine, California
16. Teresa Ramirez  
University of California  
Dept. of Pharmacology  
La Jolla, California

Postdoctoral Fellows

1. Dr. Steven Hersh  
Emory University  
Dept of Neurology  
Atlanta, Georgia
2. Dr. Anthony Morielli  
Harvard University  
Cambridge, Massachusetts
3. Dr. Tracy Spalding  
University of Vermont  
Dept. of Psychiatry  
Burlington, Vermont
4. Dr. Ann Gnagey  
University of Vermont  
Dept. of Psychiatry  
Burlington, Vermont
5. Dr. Louise Nuttle  
University of Mississippi Medical Center  
Dept. of Pharmacology and Toxicology  
Jackson, Mississippi
6. Dr. Babatunde Ojo  
University of Toledo  
Dept. of Biological and Medicinal Chemistry  
Toledo, Ohio
7. Dr. Paola Costa  
University of Washington  
Dept. of Environmental Health  
Seattle, Washington
8. Dr. Nan-Xan Qian  
National Jewish Center for Immunology-  
and Respirator Medicine  
Denver, Colorado

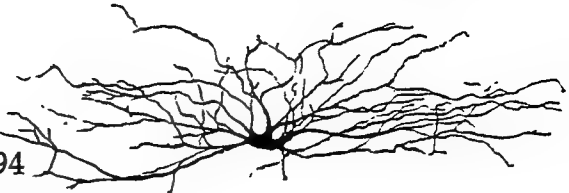
Otto Loewi; New Investigator Awardees

1. Dr. Jelweh Lameh  
University of California  
School of Pharmacy  
San Francisco, California
2. Dr. Norman Lee  
Institute for Genomic Research  
Gaithersburg, Maryland



The University of Michigan  
Neuroscience Laboratory Building

November 14, 1994



Dr. Ruth R. Levine  
Boston University School of Medicine  
80 East Concord Street  
Boston, MA 02118

RE: 6th International Symposium on Subtypes of Muscarinic Receptors

Dear Ruth:

I wanted to write you a short note to express my appreciation for all your hard work and effort that went into organizing such a wonderful meeting. The location and food were superb, the sessions were scientifically stimulating and there was much opportunity for productive scientific interactions. I think that I can speak for many when I say this was one of the most scientifically rigorous and enjoyable meetings that I've attended in recent years.

I also wanted to especially thank you for providing the financial support that allowed my graduate student, Diana Slowiejko, to attend the meeting. In these fiscally inhospitable times with cuts in NIH funding of R01s, it is often difficult, if not impossible, to find the funds necessary to enable graduate students to attend meetings such as that focused on Muscarinic Receptor Subtypes. Yet I consider attendance at such meetings to be an essential part of a graduate student's training. Not only are students exposed to the most recent thinking, but they have the opportunity of meeting and speaking with internationally renowned individuals who previously were merely authors on well-thumbed papers! As a consequence, the possibility of a successful career in biomedical research becomes more real and enticing to them. I know that in Diana's case, she gained enormously from attendance at the Meeting and has returned brimming with new ideas and directions for her work. Thus, both of us are indebted to you for all of your efforts and kindness on our behalf. Once again, many thanks.

All best wishes,

Sincerely yours,

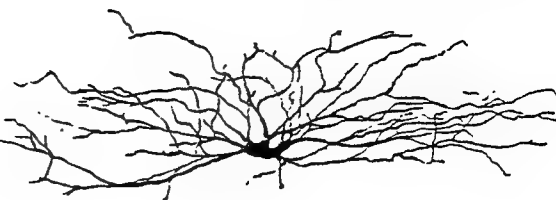
A handwritten signature in black ink that reads 'Steve'.

Stephen K. Fisher, Ph.D.  
Associate Professor of Pharmacology

SKF:jk



The University of Michigan  
Neuroscience Laboratory Building



December 6, 1994

Dr. Ruth Levine  
Professor of Pharmacology  
Associate Dean, Emeritus  
Boston University School of Medicine  
80 East Concord Street  
Boston, MA 02118

Dear Dr. Levine:

Thank you very much for both an exciting and generous opportunity to attend the Sixth Symposium on Subtypes of Muscarinic Receptors this November. Both the scientific content and the personal interactions with other scientists was very rewarding and stimulating! Thank you again.

Sincerely yours,

Diana M. Slowiejko



DEPARTMENT OF PHARMACOLOGY  
COLLEGE OF MEDICINE

IRVINE, CALIFORNIA 92717

November 19, 1994

Ruth R. Levine, Ph.D.  
80 East Concord Street  
Boston, MA 02118

Dear Dr. Levine,

I just wanted to thank you and especially the NIH and NSF for the travel fellowship which allowed me to attend the recent Sixth Symposium on Subtypes of Muscarinic Receptors. The meeting was such a success! I really had a great experience talking with some of the most prominent researchers in the field, and finding out about the recent discoveries in the area of muscarinic subtypes. These symposia are very valuable learning experiences for pre- and post-doctoral students and fellows, and hopefully more will be able to attend the meeting in the future.

Thank you again.

Sincerely,

A handwritten signature in cursive script, appearing to read "Beth Thomas".

Elizabeth A. Thomas

Department of Molecular Pharmacology  
and Biological Chemistry

303 East Chicago Avenue  
Chicago, Illinois 60611-3008  
(312) 503-0800  
Fax (312) 503-5349

November 17, 1994

Dear Dr. Levine,

I am now back in the laboratory after attending the Symposium on Subtypes of Muscarinic Receptors, ready to work harder than ever, excited about the response to my work, and eager to see the "finished products" from other posters as they are published. This was the first major meeting I have attended, and I believe that it was the perfect meeting in which to start communicating my work. I especially enjoyed meeting and interacting with students from other laboratories, and the willingness of primary investigators to discuss my results and compare them with their own findings during poster sessions added to the education I received at this meeting. I have more confidence than ever that my advisor, Dr. Hosey, is asking good scientific questions and that my project is important to the field at large. I cannot fail to thank you again for the generous travel fellowship. It certainly made it much easier to attend and benefit from this Symposium. I would encourage you to have students help with registration again at the next Symposium; this was a great way to break away from our laboratory groups and get to know each other. It also helped me match names with faces from the start of the meeting. In short, I had a wonderful time attending the meetings and poster sessions. Thank you for your efforts in organizing the meeting and gathering financial support for other students and myself. I hope to see you in two years!

Sincerely,



Robin Pals-Rylaarsdam





DEPARTMENT OF PHARMACOLOGY  
COLLEGE OF MEDICINE

IRVINE, CALIFORNIA 92717

November 21, 1994

Dr. Ruth Levine  
Department of Pharmacology  
Boston University School of Medicine  
80 East Concord Street  
Boston, MA 02118

Dear Dr. Levine,

I wanted to take the opportunity to congratulate you on your wonderful job in organizing the recent Sixth International Symposium on Subtypes of the Muscarinic Receptors. As a graduate student, I truly enjoyed meeting and interacting closely with scientists doing research in the muscarinic field, many of whom I've only encountered by reading journal articles. The opportunity to exchange ideas and gather information which will forward my own research was invaluable. Also, I want to thank you again for helping me attend the meeting. Without the travel funds you provided, my attendance would not have been possible, and I am thus quite grateful. I'm eagerly looking forward to seeing you at the Seventh International Symposium. Until then, I am

Respectfully yours,

A handwritten signature in black ink, appearing to read "Ed Gerstin", with a long, sweeping flourish extending from the end.

E. H. Gerstin, Jr.

November 16, 1994

Dear Dr. Levine,

I would like to extend my sincerest thanks for the student travel award to attend the Sixth International Symposium on Subtypes of Muscarinic Receptors. Attending the meeting afforded me the opportunity to present and discuss my data in a positive and interactive setting. The seminars were very enjoyable, particularly those given by the Otto Loewi New Investigator Award winners. Also, it was exciting to meet so many distinguished and well known scientists in the muscarinic receptor field. Participating in the meeting was a valuable educational experience for which I am most grateful. Again, thank you very much.

Sincerely,

A handwritten signature in cursive script that reads "Lise A. McKinnon". The signature is fluid and includes a long, sweeping horizontal line at the end.

Lise A. McKinnon  
Dept. of Pharmacology  
University of Washington



DEPARTMENT OF PHARMACOLOGY  
COLLEGE OF MEDICINE

IRVINE, CALIFORNIA 92717

November 28, 1994

Ruth R. Levine, Ph.D.  
Boston University School of Medicine  
80 E. Concord St.  
Boston, Mass. 02118

Dear Dr. Levine:

I would like to thank you for providing me with the opportunity to attend the Subtypes of Muscarinic Receptors Sixth International Symposium. As a graduate student, it is important to be able to interact with other scientists and receive input on poster presentations. However, this is the only meeting which offers such an abundance of information focused on what I am interested in the most, that being muscarinic receptors. I was very pleased to be able to hear the talks being presented by the leaders in the field and I was equally excited to be able to meet the authors of the papers which have provided the basis for much of our work. Unfortunately, this kind of setting is not available at any other meeting and so I would certainly hope that these meetings could continue. Thank you once again for making it all possible. I hope to be at the next meeting as well!

Sincerely,

  
Evette Esqueda

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF PHARMACOLOGY  
SCHOOL OF MEDICINE9500 GILMAN DRIVE  
LA JOLLA, CALIFORNIA 92093-0636  
FAX: (619) 534-6833

November 14, 1994

Ruth R. Levine, Ph.D.  
Professor of Pharmacology  
Boston University School of Medicine  
at Boston University Medical Center  
80 East Concord Street  
Boston, MA 02118

Dear Ruth:

It was a real pleasure for me to be at the Muscarinic Receptor Subtypes meeting and to once again feel part of such a special group of scientists. You have performed a remarkable service by creating this unique community for the young and aging amongst us. And of course, the arrangements were as always superb. Thank you once again.

Fondly,

Joan Heller Brown, Ph.D.  
Professor of Pharmacology

JHB/pk



DEPARTMENT OF PHARMACOLOGY  
UCLA SCHOOL OF MEDICINE  
CENTER FOR THE HEALTH SCIENCES  
LOS ANGELES, CALIFORNIA 90024

November 27, 1994

Ruth R. Levine, Ph.D.  
Professor of Pharmacology  
University Professor  
80 East Concord Street  
Boston MA 02118

Dear Ruth,

Thank you very much for inviting me to participate in such a marvellous symposium, and for your very generous hospitality. You go from strength to strength, not only in the scientific force of the symposium but in the creature comforts that you arrange to provide. I am most grateful.

I have a manuscript partially prepared, but I was working under the assumption that before the final version was submitted I would be able to read the manuscripts. I would very much appreciate it if you could arrange to have them sent to me as soon as possible. I shall also need the typing mats from Life Sciences needed for the preparation of the final manuscript. Perhaps you could let me have the name and telephone number of the editor at Life Sciences who is supervising the production of this special issue.

Thank you again for a most stimulating intellectual experience and a thoroughly enjoyable personal one.

With best personal regards,

*affectionately*  
Yours sincerely,

A handwritten signature in cursive script, appearing to read "Don".

Donald J. Jenden  
Professor of Pharmacology  
and Biomathematics